TAB G
PART 2

schematically illustrated Fig. 10. Book 135 comprising core 33, including at least one layer of ink 36 and at least one layer of overlaminate film 38, 39 is positioned between laminating plates which are preferably highly polished plates such as mirror finished stainless steel plates 90, 92. Book 135 also comprises first and second laminating pads 60, 62 and first and second steel plates 70, 72 as is discussed above in relation to Fig. 7.

When book 135 is positioned between upper and lower platens 42,44 of laminator 40 as shown in Fig. 10, the laminator is closed and a heat cycle in the range of 175º F to 300º F, and most preferably in the range of 180ºF to 275ºF, is applied to book 135 for a period of 10 to 25 minutes with a ram pressure that varies depending upon sheet size or the ram size of the laminator 40, but which is typically approximately 1000 p.s.i. with an 18 inch diameter ram. The laminator 40 is then caused to execute a chill cycle, preferably with a corresponding increase in ram pressure. For example, the chill temperature may be in the range of 40º F to 65º F and last for a period of 10 to 25 minutes. A ram pressure increase of approximately 25% over the pressure used for the heat cycle has been found to be most preferable.

Subsequent to the above described second lamination cycle as illustrated in Fig. 10, a sheet of plastic card

stock is provided which comprises at least core 33 with at least one surface 34,35 thereof covered by a layer of ink 36, and with at least one surface 34,35 thereof covered by a layer of overlaminate film 38, 39. Preferably plastic card stock manufactured in accordance with the present invention comprises core 33 covered on both surfaces 34,35 with a layer of ink 36 which is positioned between layers of overlaminate film 38,39, all of which has been laminated together as described. One or more cards 10 then may be cut from the resulting plastic card stock and card 10 will have a thickness in the range of 0.028 inches to 0.032 inches with variation in overall thickness across the surfaces 12, 14 thereof being no greater than approximately 0.0005 inches. The one or more cards 10 can thus be said to have a surface smoothness of approximately 0.0005 inches or better. Thus, a card 10 manufactured in accordance with the present invention includes at least one surface 12,14 at preferably both surfaces 12,14 that are sufficiently smooth and regular to receive dye sublimation printing.

Those skilled in the art will recognize that the foregoing description has set forth the preferred embodiment of the invention in particular detail and it must be understood that numerous modifications, substitutions, and changes may be undertaken without departing from the true

spirit and scope of the present invention as defined by the ensuing claims.

What is claimed is:

1. A hot lamination process for the manufacture of a plastic card, said process comprising the steps of:

(a) providing first and second plastic core sheets;

(b) positioning at least one electronic element between said first and second plastic core sheets to form a layered core;

(c) positioning said core in a laminator apparatus, heating said core in said laminator, thereafter applying ram pressure to said core such that said at one electronic element is encapsulated in said core, and thereafter cooling said core in conjunction with laminator ram pressure being applied to said core, said core including an upper and lower surfaces;

(d) printing on at least one of said upper and lower surfaces of said core such that a layer of ink is applied to said at least one upper and lower surface of said core;

(e) positioning said core in a laminator apparatus with a layer of overlaminate film on at least one of said upper and lower surfaces of said core and laminating said layer of overlaminate film to said core in said laminator to thereby form a sheet of plastic card stock; and,

(f) cutting at least one card from said sheet of plastic card stock.

2. A hot lamination process as recited in claim 1, wherein said step (c) of positioning said core in a laminator apparatus is carried out by positioning said core between first and second laminating plates, at least one of said first and second laminating plates having a matte finish to provide at least one of said upper and lower core surfaces with a correspondingly textured surface.

3. A hot lamination process as recited in claim 2, wherein each of said first and second laminating plates includes matte finish to provide both of said upper and lower surfaces of said core with a correspondingly textured surface.

4. A hot lamination process as recited in claim 1, wherein said first and second plastic core sheets are made from a material selected from the group consisting of polyvinyl chloride, polyester, and acrylonitrile-butadiene-styrene, wherein each of said sheets has a thickness in the range of 0.007 inches to 0.024 inches.

5. A hot lamination process as recited in claim 4, wherein said first and second plastic core sheets have a thickness of approximately 0.0125 inches.

6. A hot lamination process as recited in claim 1, wherein said step (c) is carried out by:

(c1) constructing a first book including said core and at least first and second laminating plates respectively adjacent to said upper and lower surfaces of said core ;

(c2) positioning said book in said laminator apparatus;

(c3) closing said laminator apparatus and heating said core for a first predetermined amount of time without applying essentially any laminator ram pressure to said core;

(c4) increasing said laminator ram pressure following the passage of said first predetermined amount of time to apply pressure to said core in conjunction with said heating of said core; and,

(c5) cooling said core in said laminator in conjunction with laminator ram pressure being applied to said core.

7. A hot lamination process as recited in claim 6, wherein said step (c5) is carried out with a ram pressure that is greater than the ram pressure utilized in step (c4).

8. A hot lamination process as recited in claim 7, wherein the laminator pressure utilized in step (c5) is at least approximately 25% greater than the ram pressure utilized in step (c4).

9. A hot lamination process as recited in step 6, wherein at least one of said first and second laminating plates is a matte finished laminating plate to provide at least one of said upper and lower surfaces of said core with a corresponding matte finish.

10. A hot lamination process as recited in claim 9, wherein both of said first and second laminating plates are matte finished laminating plates to provide each of said upper and lower surfaces of said core with a corresponding matte finish.

11. A hot lamination process as recited in claim 6, wherein said step (c3) is carried out by heating said core to a temperature in the range of 300°F to 370°F for at least 5 to 10 minutes.

12. A hot lamination process as recited in claim 11, wherein said step (c4) is carried out by increasing said laminator ram pressure to a pressure approximately in the range of 700 p.s.i. to 1000 p.s.i. for at least 10 minutes.

13. A hot lamination process as recited in claim 1, wherein said step (d) is carried out utilizing a printing press.

14. A hot lamination process as recited in claim 1, wherein said step (d) is carried out utilizing a coating techniques selected from the group consisting of silk screen printing, offset printing, letterpress printing, screen printing, roller coating, spray printing, and litho-printing.

15. A hot lamination process as recited in claim 1, wherein said step (e) is carried out by positioning said core between first and second sheets of overlaminate film such that a layer of overlaminate film is laminated to both said upper and lower surfaces of said core.

16. A hot lamination process as recited in claim 1, wherein said at least one electronic element is a micro-chip and an associated wire antenna.

17. A hot lamination process as recited in claim 1, wherein said at least one electronic element is a micro-chip and an associated circuit board antenna.

18. A hot lamination process as recited in claim 1, wherein said at least one electronic element is a read/write integrated chip and an associated antenna.

19. A hot lamination process as recited in claim 1, wherein said step (e) is carried out by positioning said core with said layer of overlaminate film in said laminator apparatus between first and second laminating plates, wherein at least one of said first and second laminating plates includes a highly polished surface in contact with said layer of overlaminate film.

20. A plastic card constructed in accordance with claim 1.

21. A plastic card comprising:

a plastic core including at least one electronic element embedded therein, said core having an upper surface and a lower surface;

a coating on at least one of said upper and lower surfaces; and,

a layer of overlaminate film positioned on said at least one coated surface, wherein said card has an overall thickness in the range of approximately 0.028 inches to 0.032 inches with a variation in overall thickness across the upper and lower surfaces being no greater than approximately 0.0005 inches.

22. A plastic card as recited in claim 21, wherein said core is made from a plastic selected from the group consisting of polyvinyl chloride, polyester, and acrylonitrile-butadiene-styrene

Express Mail Label No.

Docket No.
6014-1

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Radio Frequency Identification Card and Hot Lamination Process for the Manufacture of Radio Frequency Identification Cards

the specification of which

(check one)

☒ is attached hereto.

☐ was filed on _____ as United States Application No. or PCT International Application Number _____

and was amended on _____

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)			Priority Not Claimed
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

60/005,685	10/17/95
(Application Serial No.)	(Filing Date)
(Application Serial No.)	(Filing Date)
(Application Serial No.)	(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112. I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

(6)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

Steven M. Haas , Reg. No. 37,841
Scott M. Oldham, Reg. No. 32,712
Mark A. Watkins, Reg. No. 33,813
Stephen L. Grant, Reg. No. 33,390
Craig E. Miller, Reg. No. 33,427
Louis F. Kreek, Reg. No. 17,241

Send Correspondence to: **Steven M. Haas**
Oldham & Oldham Co., L.P.A.
1225 West Market Street
Akron, OH 44313-7188

Direct Telephone Calls to: *(name and telephone number)*
Steven M. Haas (330) 864-5550

1-00

Full name of sole or first inventor **Keith R. Leighton**
Sole or first inventor's signature Keith R. Leighton — Date: **October 5, 1996**
Residence **Lorain, Ohio** OH
Citizenship **U.S.A.**
Post Office Address **2817 Fulmer Road, Lorain, Ohio 44053**

Full name of second inventor, if any
Second inventor's signature — Date
Residence
Citizenship
Post Office Address

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) AND 1.27 (b)) - INDEPENDENT INVENTOR	Docket No. 6014-1

Application/Patent No.	Filing Date	Patent No.	Issue Date

Applicant/Patentee: LEIGHTON, Keith R.

Invention: **Radio Frequency Identification Card and Hot Lamination Process for the Manufacture of Radio Frequency Identification Cards**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled above and described in:

- ☒ the specification to be filed herewith.
- ☐ the application identified above.
- ☐ the patent identified above.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern or organization exists.
- ☐ Each such person, concern or organization is listed below.

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27)

FULL NAME _____

ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____

ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____

ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____

ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF INVENTOR **Keith R. Leighton**
SIGNATURE OF INVENTOR Keith R. Leighton DATE: **October 5, 1996**

NAME OF INVENTOR ____________
SIGNATURE OF INVENTOR ____________ DATE: ________

NAME OF INVENTOR ____________
SIGNATURE OF INVENTOR ____________ DATE: ________

NAME OF INVENTOR ____________
SIGNATURE OF INVENTOR ____________ DATE: ________

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SIGNATURE OF INVENTOR ____________ DATE: ________

NAME OF INVENTOR ____________
SIGNATURE OF INVENTOR ____________ DATE: ________

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08/727789

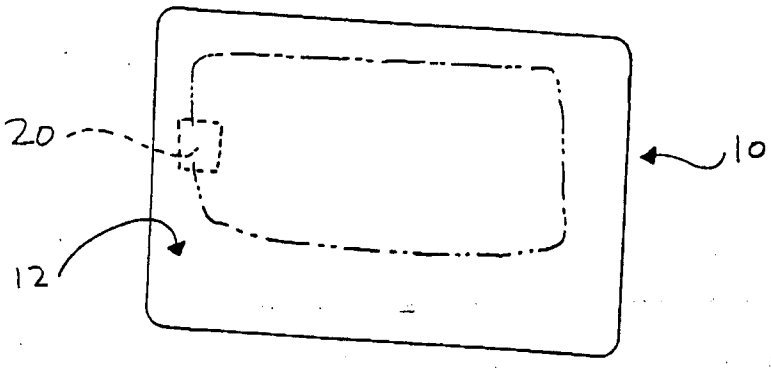

Fig. 1

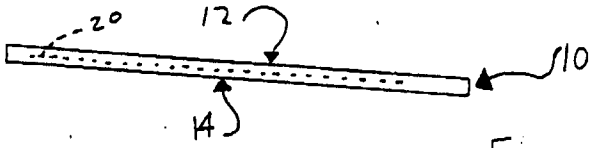

Fig. 2

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Fig. 3A

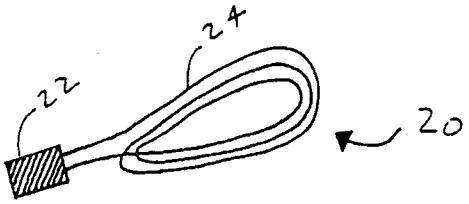
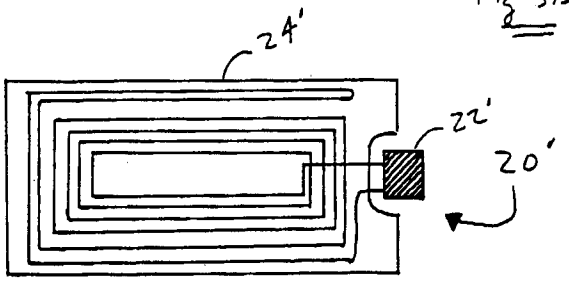


Fig 3B



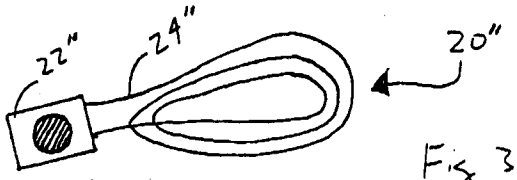


Fig 3C

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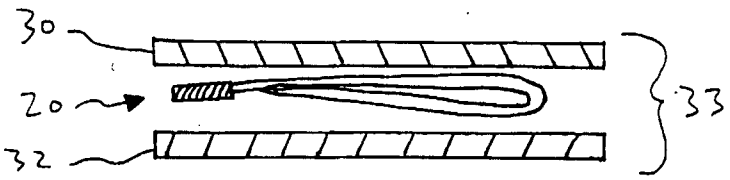

Fig 4

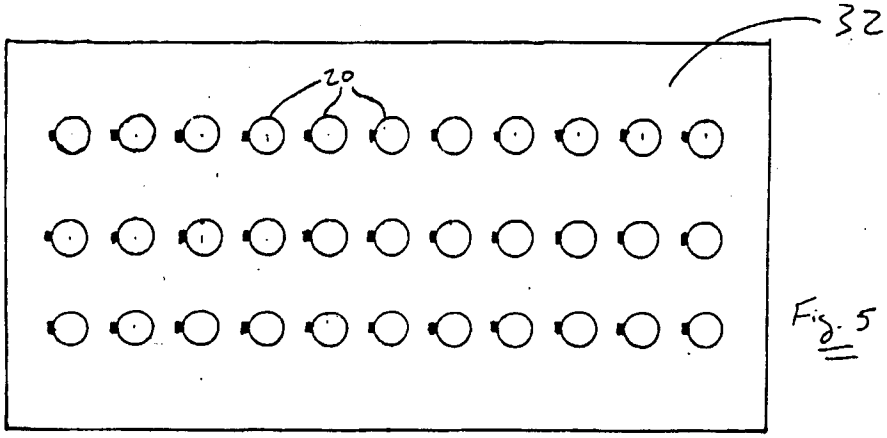

Fig. 5

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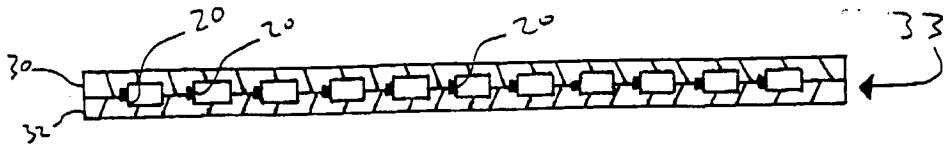

Fig 6

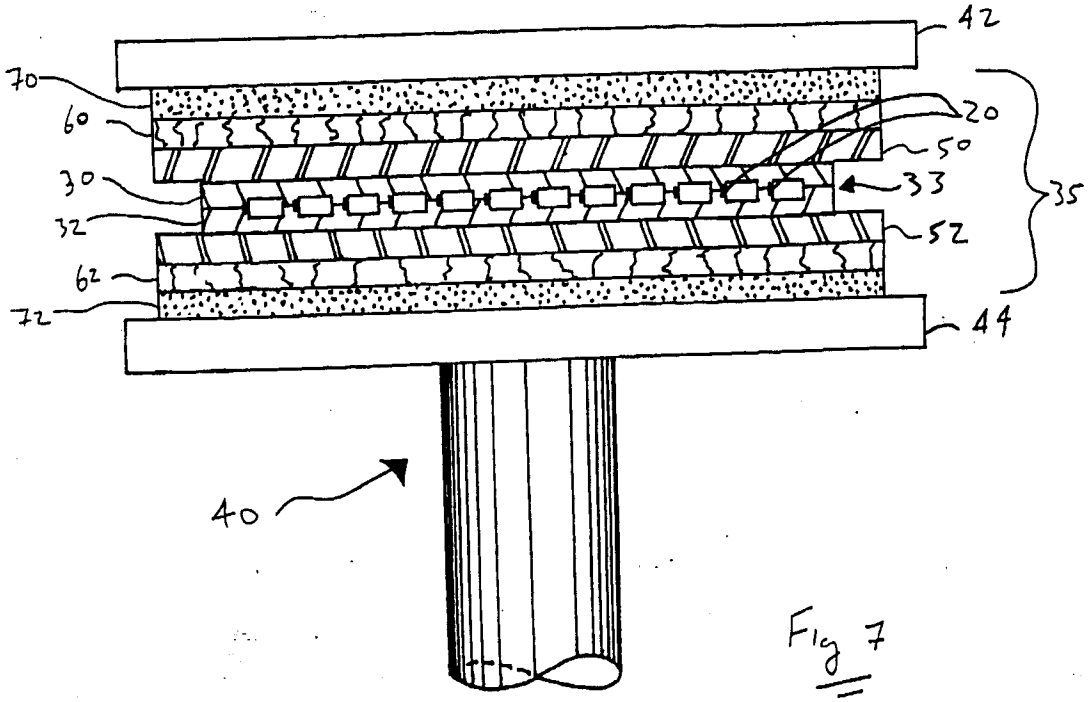

Fig 7

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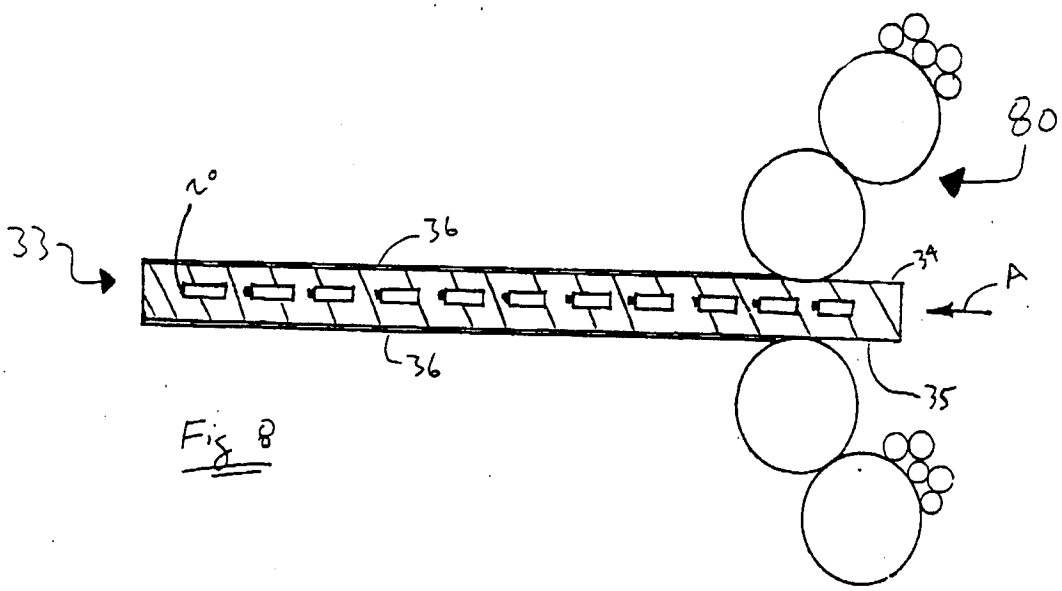

Fig 8

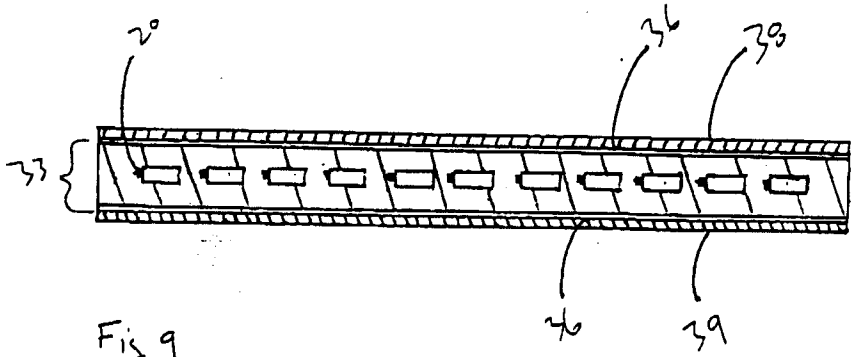

Fig 9

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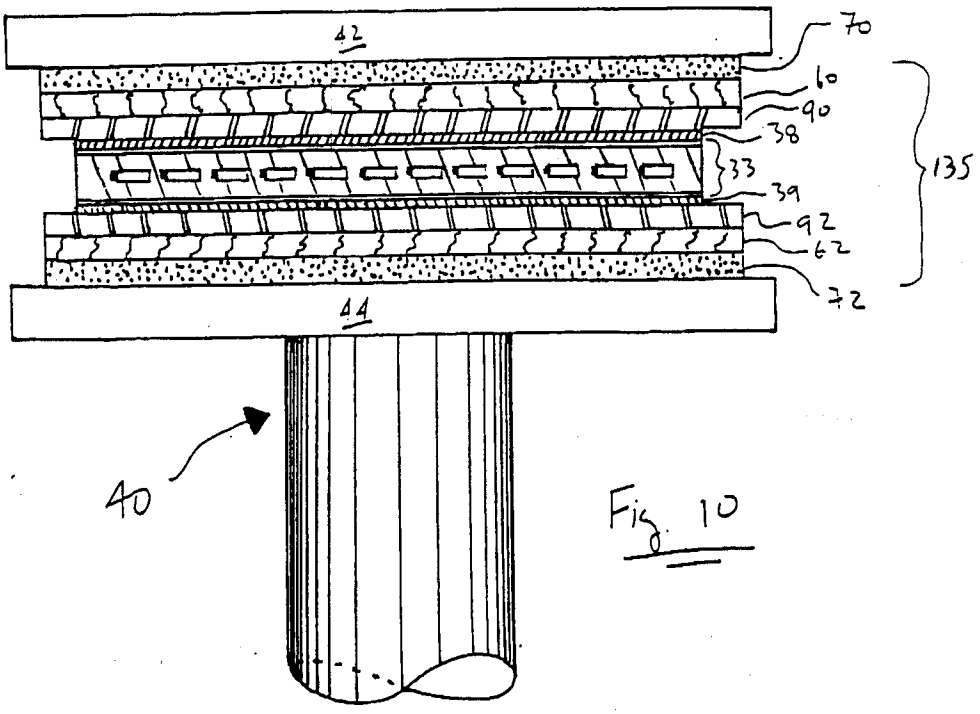

Fig. 10

9/10/97

Sp 1300

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#1½/U. Day
9/10/97

Applicant:	Keith Leighton	Examiner:	
Serial No:	08/727,789	Art Unit:	1315
Filed:	10/07/96	Date:	August 11, 1997

For: RADIO FREQUENCY IDENTIFICATION CARD AND HOT LAMINATION PROCESS FOR THE MANUFACTURE OF RADIO FREQUENCY IDENTIFICATION CARDS

Commissioner of Patents and Trademarks
Washington, D. C. 20231

TRANSMITTAL

Transmitted herewith:

1) Information Disclosure Statement
2) PTO Form 1149 and cited references
3) Acknowledgement of Receipt/Return Card

OLDHAM & OLDHAM CO., L.P.A.

By _____
Mark A. Watkins, Esq.
Reg. No.: 33,813

CERTIFICATE OF MAILING (37 CFR 1.10)

I hereby certify that this paper is being deposited with the United States Postal Service on this date August 11, 1997 in an envelope as "Express Mail Post Office to Address" Mailing No. EM449841381US addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

_____
Mark A. Watkins, Esq.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Keith Leighton Examiner:

Serial No: 08/727,789 Art Unit: 1315

Filed: 10/07/96 Date: August 11, 1997

For: RADIO FREQUENCY IDENTIFICATION CARD AND HOT LAMINATION PROCESS FOR THE MANUFACTURE OF RADIO FREQUENCY IDENTIFICATION CARDS

Commissioner of Patents and Trademarks
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

This Information Disclosure Statement is believed to be filed prior to a first Patent Office Action on the merits and is therefore thought timely.

The filing of this Information Disclosure Statement shall not be construed as a representation that a search has been made (37 CFR §1.56(g)), an admission that the information cited is, or is considered to be, material to patentability or that no other material information exists.

The filing of this Information Disclosure Statement shall not be construed as an admission against interest in any manner. Notice of January 9, 1992, 1135 O.G. 13, at 25.

This Information Disclosure Statement is made to comply with the duty of candor imposed on all individuals associated with the filing or prosecution of this application, as defined by 37 CFR §1.56(c).

A list of the patents and other cited references cited by the applicant are enclosed on one sheet of Form PTO-1449 which is attached and made a part hereof. Copies of the references have been enclosed. The relevance of each cited reference is thought to have been sufficiently discussed in the prosecution of the parent applications and, therefore, has

not been recited herein. Should the Examiner desire copies of the references, Applicant's Attorney would readily supply the same.

This Information Disclosure Statement is based on information contained in the undersigned attorney file as of the date of this statement and is inclusive of the best information known to the undersigned at that date.

The Examiner is kindly requested to consider the Information Disclosure Statement in addition to any references identified by the Examiner as a result of his independent search and examination.

Respectfully submitted,

OLDHAM & OLDHAM CO., LPA

Mark A. Watkins
Registration 33,813

MAW/clj

Twin Oaks Estate
1225 West Market Street
Akron, OH 44313-7188
(330) 864-5550

Attorney Docket: 6014-1

INFORMATION DISCLOSURE CITATION *(Use several sheets if necessary)*	Docket Number (Optional) 6013	Application Number 08/727,789	
	Applicant(s) Keith Leighton		
	Filing Date 10/07/96	Group Art Unit ~~1215~~ 1733	

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
FJL	A	5,[illegible]	5/4/93	Uenishi et al.			
	B	4,980,802	12/25/90	Champagne et al.			
	C	5,097,117	3/17/92	Champagne et al.			
	D	5,438,750	8/8/95	Venambre			
	E	5,567,362	10/22/96	Grun			
	F	4,795,898	1/3/89	Bernstein et al.			
	G	4,701,236	10/20/87	Vieilledent			
	H	4,792,843	12/20/88	Haghiri-Tehrani et al.			
	I	5,173,840	12/22/92	Kodai et al.			
	J	5,412,192	5/2/95	Hoss			
FJL	K	5,268,699	12/7/93	Laute et al.			

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation YES	Translation NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER [signature]	DATE CONSIDERED 9 Apr, 98

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
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Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/727,789	10/07/96	LEIGHTON K	6014-1

13M1/0908

STEVEN M HAAS
OLDHAM & OLDHAM CO
1225 WEST MARKET STREET
AKRON OH 44313-7188

EXAMINER	
LORIN,F	
ART UNIT	PAPER NUMBER
1301	

DATE MAILED: 09/08/97

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95)
*U.S. GPO: 1997-422-196/60031

1- File Copy

Office Action Summary	Application No. 08/727,789	Applicant(s) Leighton
	Examiner Francis J. Lorin	Group Art Unit 1301

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-22* is/are pending in the application.

Of the above, claim(s) *20-22* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-19* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-19, drawn to a method, classified in class 156, subclass 250.

II. Claims 20-22, drawn to an article, classified in class 428, subclass 68.

2. The inventions are distinct, each from the other because of the following reasons: Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the article can be made by molding rather than laminating.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Mark Watkins (with examiner William Watkins) on July 30, 1997, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-19. Affirmation of this election must be made by applicant in responding to this Office action. Claims 20-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 9-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haghiri-Tehrani et al (U.S. Patent No. 4,450,024).

As to sole pending independent claim 1, the reference teaches a lamination process for making an electronic card, see the abstract. Although the reference does not specify the application of a printing layer in the manner recited in the claim, absent any evidence to the contrary, it would have been obvious to one of ordinary skill in the art to apply any layer to those already present in the card during lamination, the application of a printed layer being considered exemplary.

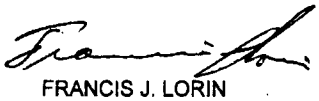
As to the dependent claims regarding the various sequential pressures and other process parameters, these are considered within the purview of one of ordinary skill in the art and would depend upon the type of material being laminated. As to the recitations in the dependent claims regarding various types of materials, these are considered within the purview of one of ordinary skill in the art.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Both Yanaka et al (U.S. Patent No. 5,067,008) and Terauchi (U.S. Patent No3. 5,396,650) teach methods for making IC cards.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Francis J. Lorin whose telephone number is (703) 308-2061.

Any inquiry of a general nature can be directed to the Group receptionist at (703) 308-0651.

The FAX number for Group art unit 1301 is (703) 305-7115.



FRANCIS J. LORIN
PATENT EXAMINER
ART UNIT 1301

Francis J. Lorin
September 2, 1997

Notice of References Cited

Application No.	Applicant(s)		
08/727,789	Leighton		
Examiner	Group Art Unit		Page 1 of 1
Francis J. Lorin	~~1301~~ 1753		

U.S. PATENT DOCUMENTS

		DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
	A	4,450,024	5/1984	Haghiri-Tehrani et al	156	108
	B	5,067,008	11/1991	Yanaka et al	357	81
	C	5,396,650	3/1995	Terauchi	455	38.2
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
	N						
	O						
	P						
	Q						
	R						
	S						
	T						

NON-PATENT DOCUMENTS

		DOCUMENT (Including Author, Title, Source, and Pertinent Pages)	DATE
	U		
	V		
	W		
	X		

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) (Small Entity)	Docket No. 6014-1

In Re Application Of: **Keith Leighton**

#3/V.d ay 2/7/98

Serial No.	Filing Date	Examiner	Group Art Unit
08/727,789	10/07/96	Lorin, F.	1301

Invention: **RADIO FREQUENCY IDENTIFICATION CARD AND HOT LAMINATION PROCESS FOR THE MANUFACTURE OF RADIO FREQUENCY IDENTIFICATION CARDS**

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a response to the Office Action of 09/08/97 (Date) bove-identified application.

The requested extension is as follows (check time period desired):

☒ One month ☐ Two months ☐ Three months ☐ Four months ☐ Five months

from: 12/08/97 (Date) until: 01/08/98 (Date)

A verified statement of small entity status as a small entity under 37 CFR 1.27:

☐ is enclosed.
☒ has already been filed in this application.

The fee for the extension of time is **$55** and is to be paid as follows:

☒ A check in the amount of the fee is enclosed.
☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. **15-0450**
A duplicate copy of this sheet is enclosed.
☒ If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No. **15-0450** A duplicate copy of this sheet is enclosed.

01/20/1998 DTHOMAS 00000051 08727789
01 FC:215 $55.00 OP

Signature

Dated: **January 8, 1998**

Mark A. Watkins, Reg. No. 33,813
Oldham & Oldham Co., LPA
1225 West Market Street
Akron, Ohio 44313-7188

I certify that this document and fee is being deposited on **January 8, 1998** with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

Cherrie Jacofsky

Signature of Person Mailing Correspondence

Cherrie L. Jacofsky

Typed or Printed Name of Person Mailing Correspondence

cc:

P12SMALL/REV05

1/28/1998 GAU 1301

AMENDMENT TRANSMITTAL LETTER (Small Entity)			Docket No.
Applicant(s): Keith Leighton			6014-1
Serial No. 08/727,789	Filing Date 10/07/96	Examiner Lorin, F.	Group Art Unit 1301

OIPE JC14 JAN 12 1998 PATENT & TRADEMARK OFFICE

Invention: **RADIO FREQUENCY IDENTIFICATION CARD AND HOT LAMINATION PROCESS FOR THE MANUFACTURE OF RADIO FREQUENCY IDENTIFICATION CARDS**

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith is an amendment in the above-identified application.

- ☒ Small Entity status of this application has been established under 37 CFR 1.27 by a verified statement previously submitted.
- ☐ A verified statement to establish Small Entity status under 37 FR 1.27 is enclosed.

The fee has been calculated and is transmitted as shown below.

CLAIMS AS AMENDED

	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST # PREV. PAID FOR		NUMBER EXTRA CLAIMS PRESENT		RATE	ADDITIONAL FEE
TOTAL CLAIMS	22	-	22	=	0	x	$11.00	$0.00
INDEP. CLAIMS	3	-	3	=	0	x	$41.00	$0.00
Multiple Dependent Claims (check if applicable) ☐								$0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT								$0.00

- ☐ No additional fee is required for amendment.
- ☐ Please charge Deposit Account No. in the amount of
  A duplicate copy of this sheet is enclosed.
- ☐ A check in the amount of to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No.
  A duplicate copy of this sheet is enclosed.
  - ☒ Any additional filing fees required under 37 C.F.R. 1.16.
  - ☐ Any patent application processing fees under 37 CFR 1.17.

Mark A. Watkins — Dated: January 8, 1998

Signature

Mark A. Watkins, Reg. No. 33,813
Oldham & Oldham Co., LPA
1225 West Market Street
Akron, Ohio 44313-7188

I certify that this document and fee is being deposited on 1-8-98 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Mark A. Watkins

Signature of Person Mailing Correspondence

Mark A. Watkins

Typed or Printed Name of Person Mailing Correspondence

cc:

P11SMALL/REV06

#24a

V. Day 2/7/98

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Keith Leighton	Examiner:	Lorin, F.
Serial No.	08/727,789	Art Unit:	1301
Filed:	10/07/96	Date:	January 8, 1998

Title: RADIO FREQUENCY IDENTIFICATION CARD AND HOT LAMINATION PROCESS FOR THE MANUFACTURE OF RADIO FREQUENCY IDENTIFICATION CARDS

Commissioner of Patents and Trademarks
Washington, D.C. 20231

AMENDMENT

Dear Sir:

In response to the Patent and Trademark Office Action dated September 8, 1997, please amend the above-identified application as follows:

In the claims:

Please delete the following claims: 6, 9, 10, and 19.

Please amend the following claims:

1.(Amended) A [hot lamination] process for incorporating at least one electronic element in the manufacture of a plastic card, [said process] comprising the steps of:

(a) providing first and second plastic core sheets;

(b) positioning said at least one electronic element in the absence of a non-electronic carrier directly between said first and second plastic core sheets to form a [layered] core, said plastic core sheets defining a pair of inner and outer surfaces of said core;

(c) positioning said core in a laminator apparatus, and subjecting said core to a heat and pressure cycle, said heat and pressure cycle comprising the steps of:

(i) heating said core [in said laminator,] for a first period of time;

(ii) [thereafter] applying [ram] a first pressure to said core for a second period of time such that said at least one electronic element is encapsulated [in] by said core[,];

(iii) [and thereafter] cooling said core [in conjunction with laminator ram] while applying a second pressure [being applied] to said core [, said core including an upper and lower surfaces].

(d) [printing on] coating at least one of said [upper and lower] outer surfaces of said core [such that] with a layer of ink [is applied to said at least one upper and lower surface of said core]; and

(e) [positioning said core in a laminator apparatus with a layer of overlaminate film on at least one of said upper and lower surfaces of said core and laminating said] applying a layer of overlaminate film to at least one of said outer surfaces of said core [in said laminator to thereby form a sheet of plastic card stock; and,

(f) cutting at least one card from said sheet of plastic card stock].

2. (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein said [step (c) of positioning said core in a] laminator apparatus [is carried out by positioning said core between] has first and second laminating plates, at least one of said first and second laminating plates having a matte finish [to provide at least one of said upper and lower core surfaces with a corresponding] for creating a textured surface on at least one of said outer surfaces of said core.

3. (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 2, wherein each of said first and second laminating plates [includes] has a matte finish [to provide both of said upper and lower surfaces of said core with a correspondingly] for creating said textured surface on both of said outer surfaces of said core.

4. (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein said first and second plastic core

sheets are made from a material selected from the group consisting of polyvinyl chloride, polyester, and acrylonitrile-butadiene-styrene, [wherein] each of said sheets [has] having a thickness in the range of 0.007 [inches] to 0.024 [inches] inch.

5. (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 4, wherein said first and second plastic core sheets have a thickness of approximately 0.0125 inch [inches].

~~7.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein [said step (c5) is carried out with a ram] said second pressure [that] is greater than [the ram] said first pressure [utilized in step (c4)].

~~8.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim ~~7~~, wherein [the laminator] said second pressure [utilized in step (c5)] is at least approximately 25% greater than [the ram] said first pressure [utilized in step (c4)].

~~11.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim [6] 1, wherein said [step (c3) is carried out by heating said] core is heated in step (c)(i) to a temperature in the range of [300] 275°F to [370] 400°F and said first period of time is [for] at least five (5) [5 to 10] minutes.

~~12.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim [11] 1, wherein said [step (c4) is carried out by increasing said laminator ram] first pressure [to a pressure] is approximately [in the range of 700 p.s.i. to] 1000 p.s.i. and said second period of time is [for] at least 10 minutes.

~~13.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein said step (d) is carried out

utilizing a printing press.

11
~~14.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein said step (d) is carried out utilizing a coating technique [techniques] selected form the group consisting of silk screen printing, offset printing, letterpress printing, screen printing, roller coating, spray printing, and litho-printing.

12
~~15.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein said step (e) [is carried out by positioning said core between first and second sheets of overlaminate film such that a layer of overlaminate film is laminated to both said upper and lower surfaces of said core] of applying a layer of overlaminate film comprises the further steps of:

(a) positioning an overlaminate film on at least one ink coated surface of said core;

(b) subjecting said core to a second heat and pressure cycle comprising the steps of:

(i) heating said core to a temperature between approximately 175^{0}F to 300^{0}F for approximately 10 to 25 minutes;

(ii) applying approximately 1000 p.s.i. pressure to said core; and

(iii) cooling said core to a temperature in the range of approximately 40^{0}F to 65^{0}F for approximately 10 to 25 minutes.

13
~~16.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein said at least one electronic element is a micro-chip and an associated wire antenna.

14
~~17.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element in the manufacture of a plastic card as recited in claim 1, wherein said at least one electronic element is a micro-chip and an associated circuit board antenna.

15
~~18.~~ (Amended) [A hot lamination] The process for incorporating at least one electronic element

in the manufacture of a plastic card as recited in claim 1, wherein said at least one electronic element is a read/write integrated chip and an associated antenna.

Kindly add the following new claims:

16
~~23.~~ A hot lamination process for the manufacture of plastic cards, said process comprising the steps of:

(a) providing first and second plastic core sheets;

(b) positioning at least one electronic element in the absence of a non-electronic carrier directly between said first and second plastic core sheets to form a layered core;

(c) positioning said core in a laminator apparatus, and subjecting said core to a heat and pressure cycle, said heat and pressure cycle comprising the steps of:

(i) heating said core in said laminator , in the presence of a minimal first ram pressure, to a temperature which causes controlled flow of said plastic which makes up said first and second plastic core sheets;

(ii) applying a second pressure uniformly across said core for encapsulating said at least one electronic element within said controlled flow plastic;

(iii) subsequently cooling said core in conjunction with the concurrent application of a third pressure uniformly across said core, said core including and upper and lower surfaces;

(d) printing on at least one of said upper and lower surfaces of said core such that a layer of ink is applied to at least a portion of said at least one upper and lower surface of said core.

17 16
~~24.~~ The method as recited in claim ~~23~~ wherein said first and second core layers are devoid of any appreciable cutouts.

REMARKS

The Examiner has rejected each of the pending claims, 1-19, under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,450,024 ("the '024 patent) to Haghiri-Tehrani. This rejection is respectfully traversed.

From the Examiner's rejection, it is apparent that the Examiner claims to have found each

of the elements of applicant's claimed invention anticipated by the '024 patent with the exception of the printing step, which the Examiner finds obvious under section 103(a). Applicant maintains that the '024 patent does not teach the process of the present application even in the absence of the printing step.

The '024 patent claims a lamination process for making an electronic card which protects the electronic element of the card by first placing it in a recess formed within a card layer so as to avoid damage to the electronic element from localized pressure applied in the lamination process. The patent then requires that a "buffer zone" be present within the recess. Even the broadest of claims of the '024 patent require a recess and a buffer zone, for and protecting the electronic element. These are required by the '024 invention in order to enable the card assembly to be subjected to a full laminating pressure.

No such protective elements are desired or necessary to the invention of the present application. Further, the invention taught by the '024 patent requires that the electronic element also be placed in a protective carrier disk (6), which is subsequently located within the recess.

The controlled use of a heat and pressure cycle of the present invention eliminates the requirement of both a protective carrier disk for the electronic element and/or a recess or other buffer zone formed in one or more of the card layers for carrying and protecting the electronic element. The process of the present invention allows the electronics-containing core to be subjected to the full laminating pressure without use of a recess in a card layer. Unlike anything shown in the prior art, the electronic unit is placed directly between two (2) plastic sheets. Admittedly, the '024 patent does make reference to card forming processes which vary pressure with temperature. *'024 Patent, col.6, ln. 30-46.* However, there is nothing in the '024 patent which suggests the heat and pressure cycle of the present invention. The '024 patent merely discusses the variation of pressure with temperature, it does not suggest a sequence of steps or the duration of steps which might be used to encapsulate an electronic element by a plastic card. The '024 patent does not discuss a cooling step, nor does it propose a solution to the relative pressures to be applied in the steps of the cycle.

The Examiner correctly notes that it is well within the purview of one of ordinary skill in the art to vary temperature with the type of material being laminated. However, the present invention involves more than controlling pressure as a function of temperature; the present

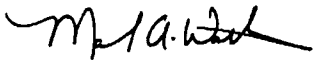
A

invention claims a coordinated heat and pressure cycle which uses multiple temperatures, pressures and time periods for a single material. The dependent claims include limitations on the ratio of pressures to be applied at various stages of the process as well as specific temperature ranges and time periods for each step. Claim 15 includes a further heat and pressure cycle to be used in the overlamination step, a step which doesn't involve protecting the electronic element.

The amendments made to the claims have not been made to avoid the 103(a) rejection. It is believed that the claims as originally submitted are unobvious over the '024 patent. The amendments were made to clarify claim language and to insure consistent language throughout both the specification and the claims.

It is believed that this application as amended is in condition for allowance. Such action is respectfully requested.

Respectfully submitted,
OLDHAM & OLDHAM CO., LPA



Mark A. Watkins, Esq.
Registration No. 33, 813

Twin Oaks Estate
1225 West Market Street
Akron, Ohio 44313-7188
(330)864-5550

Attorney Docket No. 6014-1

Notice of Allowability	Application No. 08/727,789	Applicant(s) Leighton
	Examiner Francis J. Lorin	Group Art Unit 1733

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

☒ This communication is responsive to *amendment filed 1/12/98*.

☒ The allowed claim(s) is/are *1-5, 7, 8, 11-18, 23, and 24*.

☐ The drawings filed on _____ are acceptable.

B
4-13-98
FJL

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☒ Applicant MUST submit NEW FORMAL DRAWINGS

☒ because the originally filed drawings were declared by applicant to be informal.

☐ including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. _____.

☐ including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.

☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *1*

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☐ Interview Summary, PTO-413

☒ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

☐ Examiner's Statement of Reasons for Allowance